

## Okanogan River Watershed - WRIA 49

Stream flow in the Okanogan River, as well as most of the tributaries, have been altered primarily for flood control and irrigation. As a result, their natural hydrographs have been severely altered and are generally rated as “poor”. Most of the tributaries of the Okanogan River are significantly diverted for irrigation purposes, resulting in adult migration barriers and lack of rearing habitat.

Due to varying geological and climatic conditions, many of the tributaries naturally suffer low flows during late summer and early fall and the tributaries are of relatively small size compared to other basins in eastern Washington. However, these small tributaries of the Okanogan provide critical rearing habitat for juvenile salmonids, especially those in which a significant proportion of flow originates from springs or groundwater. Some of the tributaries are capable of providing spawning habitat for summer steelhead but are generally too small to provide suitable spawning habitat for chinook. Due to significant alteration of off-channel habitat and hydrology in the mainstem of the Okanogan River, these small tributaries cumulatively provide critical rearing habitat, which is recognized as limiting in this basin.

Waters in Loup Loup Creek are heavily diverted and used for irrigation. Surface water withdrawals permitted account for only 0.1 cfs of the diversions in this creek, but claims amount to 2,366.9 cfs. The system is over allocated, and is usually dry in its lower reaches throughout the summer, precluding its use by salmonids. Due to the potentially uncertain nature of the status of these claims, any water acquisition in this basin should be carefully evaluated to ensure that acquired water could be preserved instream.

Surface water rights on Omak Creek, amount to a potential withdrawal of only 1 cfs. However, there are 18 surface water claims, totaling 1.8 cfs. This creek has significant potential for recovery of both steelhead and spring chinook and is of somewhat larger size than many other tributaries of the Okanogan. However, habitat condition is ranked poor throughout the lower reaches of this creek, and concurrent habitat restoration would be needed with any flow restoration activities.

This variability of surface runoff in the Salmon Creek Basin is so great that surface runoff from the upper watershed is often insufficient to fill Conconully Reservoir or Salmon Lake. A substantial portion of Salmon Creek flows are diverted and stored within these reservoirs. There are 89 permits for surface water withdrawals on Salmon Creek, which total 2.9 cfs. In addition, there are another 137 surface water claims for a total of 408 cfs. This system is significantly over-allocated and flows are a significant limiting factor to salmonid production. Prospective water rights must be carefully evaluated to ensure that acquired water remains instream.

Base flows in the summer and fall in Tunk Creek appear to fluctuate around 1 to 1.5 cfs throughout the lower reaches, and the lower  $\frac{3}{4}$  mile of the stream may become dewatered during dry years. Recent monitoring by the Okanogan Conservation District in the upper Tunk Creek watershed, measured flows ranging from 0.83 to 17.7 cfs, with peaks occurring in May or June (T. Nelsen-- OCD). This creek has potential to provide critical rearing habitat for salmonids, and perhaps limited spawning habitat for summer steelhead within this reach of the Okanogan River.

There is a barrier falls located at approximately RM 0.75.

Aeneas Creek is primarily spring fed, thus there is little seasonal variation in the hydrograph relative to other Okanogan tributaries influenced primarily by snowmelt runoff. Currently, there are six permitted groundwater withdrawals on Aeneas Creek, with a potential yield of 3.8 cfs. There are two surface water withdrawals permitted with a potential yield of 0.2 cfs. There are five surface water claims with potential withdrawals of 3.6 cfs. Due to the spring fed nature of this stream, temperatures are likely to be moderated and provide suitable temperatures for rearing juvenile salmonids. In addition, the habitat in this stream is relatively intact. There is a barrier falls located at about RM 0.75.

Surface water withdrawals are made from Bonaparte Creek, its tributaries, and Bonaparte Lake. The MWG (1995) documented 124 permitted surface water withdrawals from Bonaparte Creek and another 106 surface water claims. Permitted withdrawals total 26.1cfs, while claims total 26.5cfs. The Bonaparte Water Users Association has water rights to 1080 acre-feet of water from Bonaparte Lake (Unpublished memorandum, USFS 1998a). Habitat conditions are generally ranked as poor throughout this creek and anadromous access is limited to the lower one mile of creek below the barrier falls. Summer steelhead spawning does occur in this stream.

There are nine permitted surface water rights on Siwash Creek, totaling 0.1 cfs. There are an additional 27 surface water claims totaling 6.5 cfs. Siwash Creek can be dry during late summer and early fall. Irrigation withdrawals peak at this time and may be the reason for such reduced surface flows. Another hypothesis is that Siwash Creek recharges groundwater draining to Antoine Creek, and Siwash Creek will only have surface flows during times when the groundwater “aquifer” is sufficiently recharged to spill water into the Siwash aquifer. Thus, further investigation in the hyporheic connectivity of these sub-basins is prudent prior to acquiring water. Anadromous access is limiting to the lower 1.4 miles below a steep cascade.

According to MWG et al. (1995), there are 20 permitted surface withdrawals on Antoine Creek, yielding a potential removal of 7 cfs. There are additional 91 surface water claims for nine cfs. Groundwater withdrawals of 3.3 cfs are currently permitted, and an additional 76 claims are registered for 1.87cfs.

Fancher Dam reservoir entrains water from both Antoine and Mill Creeks and their tributaries. The water in Fancher Dam reservoir is used for crop irrigation on Fancher Flats during the months of May to October, annually. During this time, flow at the mouth of Antoine Creek is minimal and sometimes non-existent (D. Van Woert, personal communication). “Surface stream flow in the lower reach of Antoine Creek is often reduced to no flow during the driest part of the year. Antoine Creek has sometimes been completely dewatered in dry years due primarily to irrigation withdrawals” (USFS 1999). Anadromous fish access is limited to the lower 11.5 miles of the creek below the dam and falls.

Irrigation withdrawals are limited to the lower part of Tonasket Creek. According to MWG et al. (1995), there are 13 permitted surface withdrawals on Tonasket Creek, totaling 0.2 cfs. There are additional 70 surface water claims totaling 2.7 cfs. Other water withdrawals from Tonasket Creek and its tributaries in the Nine Mile Ranch subdivision area are suspected, as well as Mud

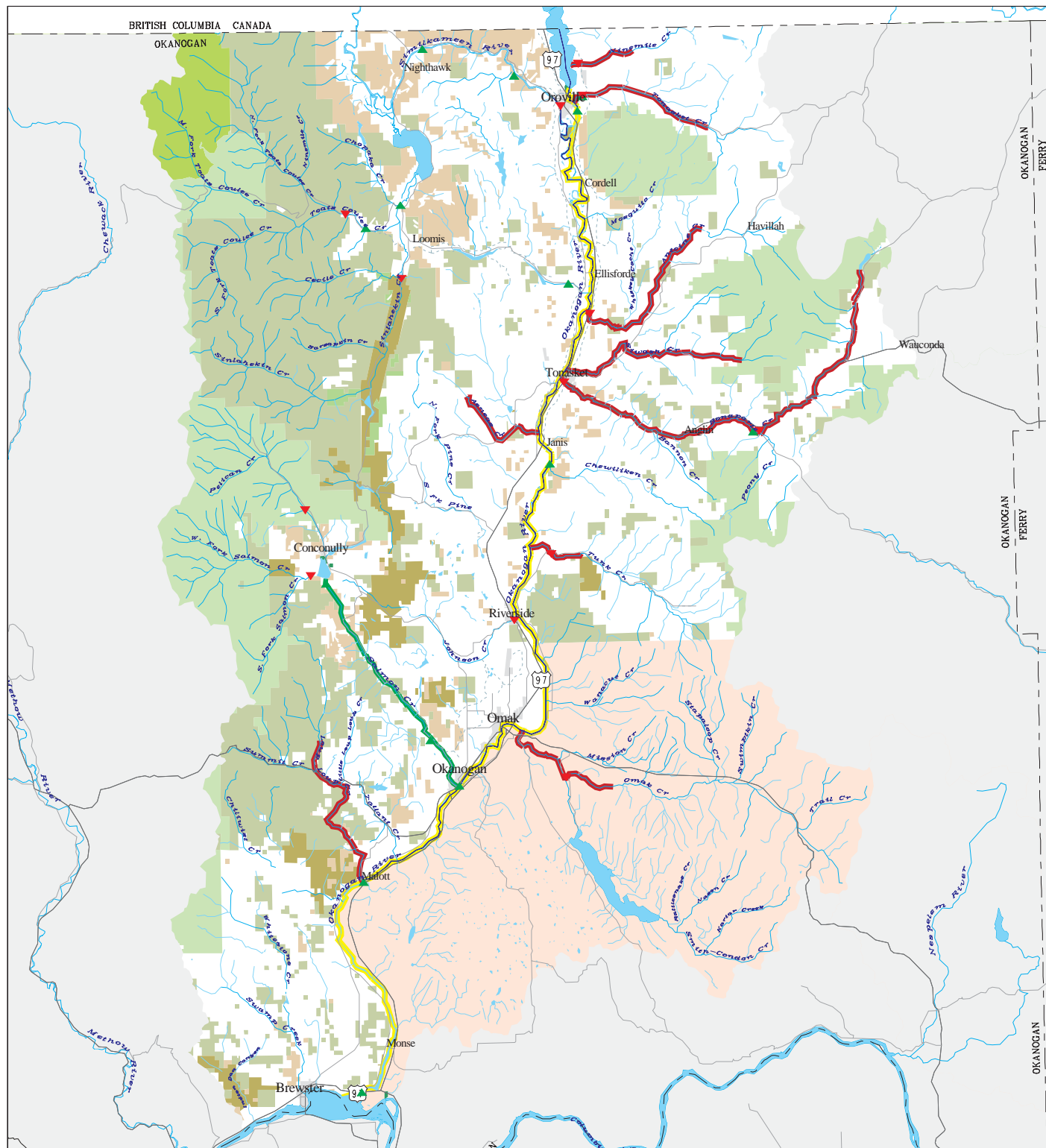
Lake Valley and Dry Creek areas. These withdrawals may be for irrigation, stock watering or perhaps domestic use. Anadromous access is limited to the lower 1.9 miles of stream due to a passage barrier at an impassable cascade extending to RM 2.4. Summer steelhead adults have been found in this reach.

Water supply to the Nine-Mile Creek drainage is limited by the arid conditions of this sub-watershed. Effect of groundwater withdrawals on stream flows has not been established, but they may be substantial.

According to MWG et al. (1995) there are 17 surface water claims totaling 6.3 cfs. There is currently only 1 surface water permit. Flows can be limited to non-existent, generally about 1 cfs, except during a brief period of snowmelt occurring generally during the spring. Snowmelt plays a most significant role in recharging ground waters to supply summer base flows. Due to its small size, this stream has very limited potential for spawning salmonids, but could provide important rearing habitat.

Although mainstem temperatures and flow are identified as being limiting in the Okanogan River, it is not expected that sufficient water is available for acquisition to address them with current funding programs. Therefore, acquisitions should be focused on tributaries providing critical rearing habitat and spawning habitat for anadromous salmonids.

Unfortunately, many of the diversions in the tributaries of this watershed are claims and not perfected rights, which may limit acquisition opportunities to restore instream flows. There may be substantial risk in acquiring water without appropriate investigation.



## Stream Flow Prioritization: Okanogan WRIA 49

Water Resources Program



WASHINGTON STATE  
DEPARTMENT OF  
ECOLOGY

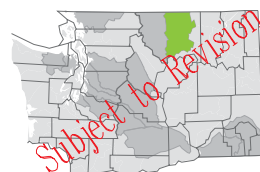
GIS Technical Services  
12/13/02  
sfp49-mpla

- US Forest Service
- US Wildlife Refuge
- US Parks/Recreation
- USFS Wilderness Area
- Bureau of Land Management
- US Dept. Defense/Energy
- Wa. Dept. of Fish & Wildlife
- Wa. Dept. of Natural Resources
- State School/Hospital/Prison
- Wa. Parks & Recreation

- City/County Watershed/Park
- Tribal Lands
- Incorporated City
- USGS Stream Flow Gage
- Ecology Stream Flow Gage
- Water Right Purchase



- Low priority stream
- Medium priority stream
- High priority stream
- Salmon/Bull Trout Spawning/Rearing area
- Other streams
- Canal/ditch/pipe
- County
- Highway
- Local Paved Roads



WDNR/Ecology - Major Public Lands 2002 100k  
WDFW/Ecology - Hydrography, 2000 100k  
Ecology - WRIA, 2002 24K  
WDOT - Transportation, 2001 24K  
WDFW - Stream Flow Prioritization 2002  
WDFW - Spawning/Rearing Areas 2002 100k  
USGS/Ecology - Stream Gages 1:100k